

This Patent License, Development, Manufacturing and Commercialization Agreement (the "Agreement") is entered into on this 30th day of November, 2018 (the "Execution Date") at the Technology Transfer Office, National University of Sciences and Technology, Islamabad, Pakistan by and between:

- (1) **National University of Sciences and Technology (NUST)**, a body corporate established under the National University of Science and Technology Act, 1997 (Act No. XX of 1997) having its registered office at CIE, RIC Secretariat, NUST Main Campus, Islamabad, Pakistan (hereinafter referred to as the "**Licensor**", which expression shall unless repugnant to the context, mean and include its administrators, authorized representatives, successors-in-interest, and permitted assigns) of the **FIRST PART**;

AND

- (2) **Pharmatec Pakistan (Pvt.) Limited**, a company organized and existing under the laws of Pakistan having its registered office at D-86/A, S.I.T.E., Karachi acting through its authorized representative Dr. Shahida Qaisar holding CNIC. No. [42301-7825489-4] (hereinafter referred to as the "**Licensee**", which expression shall unless repugnant to the context, mean and include its administrators, authorized representatives, successors-in-interest, and permitted assigns) of the **SECOND PART**;

(The Licensors and the Licensee will hereinafter collectively be referred to as the "Parties" and individually, as a "Party").

WHEREAS:

1. The Licensor is the sole and exclusive owner of the Patent Rights by virtue of an assignment dated----- executed by the inventor Dr. Shah Rukh Abbas holding CNIC 17201-0398263-0 ("**Inventor**") in favour of the Licensor and desires that the Patent Rights be used as soon as possible for the development of products and processes for public use and benefit in the public interest.
2. The Licensor has sole and exclusive right to grant and hereby desires to grant a license to the Licensee in respect of the Patent Rights pursuant to the terms and conditions hereinafter set forth.
3. The Licensee wishes to obtain a right and license in respect of the above said Patent to manufacture, market and sell the Licensed Product upon the terms and conditions hereinafter set forth.

NOW, THEREFORE, in consideration of the promises, mutual undertakings and covenants herein contained, and for other good and valuable consideration, the receipt and legal sufficiency of which is hereby acknowledged by the Parties, the Parties agree as follows:

ARTICLE 1 – DEFINITIONS

In this Agreement, including the Recitals hereto, the following capitalized words and phrases have the following meanings unless expressly stated to the contrary:

- 1.1 **Action:** has the meaning given in Article 9.3.
- 1.2 **Affiliate:** shall mean, in relation to a person, organization or entity, any other person, organization or entity which directly or indirectly through one or more intermediaries, controls, or is controlled by, or is under common control with the first person, organization or entity. For the purposes of this definition "control" means (i) the right to direct the policies or operations of the particular person, organization or entity; or (ii) the direct or indirect ownership of, in aggregate, fifty per cent (50%) or more of the

equity shares or, if different, the shares carrying a right to vote at a general meeting (or its equivalent) of the particular person, organization or entity.

- 1.3 Commercially Reasonable Efforts:** shall mean those efforts consistent with the exercise of prudent scientific and business judgement in an active and ongoing program as applied by a Party to the development and commercialization of its own pharmaceutical or healthcare products at a similar stage of development and with similar market potential.
- 1.4 Commercialization, Commercialize and Commercializing:** shall mean all activities undertaken before and after obtaining Regulatory Approvals relating specifically to the pre-launch, launch, promotion, detailing, medical education and medical liaison activities, marketing, pricing, reimbursement, sale, and distribution of the Licensed Product, including: (a) strategic marketing, sales force detailing, advertising, medical education and liaison, and market and Licensed Product support; (b) any postmarketing clinical studies for use in generating data to be submitted to Regulatory Authorities (and all associated reporting requirements); and (c) all customer support, product distribution, invoicing and sales activities.
- 1.5 Commercialization Plan:** has the meaning given in Article 6.2.
- 1.6 Confidential Information:** has the meaning given in Article 13.1.
- 1.7 Develop or Development:** shall mean all activities required in order to prepare the Licensed Product for commercial exploitation, including preparing and conducting preclinical testing, toxicology testing, human clinical studies, and regulatory activities (e.g., regulatory applications) with respect to the Licensed Product, together with the manufacturing of the Licensed Product for the purpose of conducting the foregoing activities and activities of Third Party manufacturers to develop manufacturing capabilities for Licensed Products, manufacturing process development and scale-up, quality assurance and quality control and technical support.
- 1.8 Development Plan:** has the meaning given in Article 5.2.1.
- 1.9 Execution Date:** has the meaning given in the Preamble.
- 1.10 Improvements to the Patent Rights:** has the meaning given in Article 2.5.

- 1.11 **Information:** means all tangible and intangible (a) information, techniques, technology, practices, trade secrets, inventions (whether patentable or not), methods, knowledge, know-how, skill, experience, data, results (including clinical test data and results), analytical and quality control data, results or descriptions, software and algorithms and (b) formulas, lab prototype design including schematics and layouts along with bill of quantities (BOQs) (fully identifiable active and passive components, ICs, circuits), low and high-level software design code, programmable integrated circuit codes, technical details of the product, process flow sheet and its variables, including any improvements thereto, in any form in which the foregoing may exist. As used herein, “clinical test data” shall be deemed to include all information related to the clinical or preclinical testing of a Licensed Product, including without limitation, patient report forms, investigators’ reports, biostatistical, pharmaco-economic and other related analyses, regulatory filings and communications, and the like.
- 1.12 **Infringement:** has the meaning given in Article 9.2.
- 1.13 **Inventors:** has the meaning given in the first Recital above.
- 1.14 **Licensor Know-How:** means all Information that is within the possession or control of the Licensor as of the Execution Date or which may come into its possession or control during the Term and is necessary or useful for the Development, Manufacture or Commercialization of the Licensed Product in accordance with the terms of this Agreement.
- 1.15 **Patent Rights:** shall mean those patents and patent applications listed in Schedule A and all patents claiming priority thereto or arising therefrom and includes patents and patent applications and any patent issued in the future, whether domestic or foreign, including all provisionals, divisionals, continuations, continuations-in-part reissues, reexaminations, renewals, extensions, and supplementary protection certificates of any such patents and patent applications including any foreign counterpart thereof.
- 1.16 **Licensed Product(s):** means any device, tangible materials or processes which, in the course of manufacture, use, or sale would constitute, in the absence of this Agreement, an infringement of a claim of the Patent Rights (infringement shall include, but is not limited to, direct, contributory, or inducement to infringe).

- 1.17 **Manufacture or Manufacturing:** shall mean all activities related to the manufacturing of a Licensed Product, or any component thereof, including manufacturing Licensed Products in finished form for Development, manufacturing finished Product for Commercialization, packaging, in-process and finished product testing, release of Licensed Product or any component or ingredient thereof, quality assurance activities related to manufacturing and release of the Licensed Product, ongoing stability tests and regulatory activities related to any of the foregoing.
- 1.18 **Net Sales Revenue:** shall mean amounts actually received against bills or invoices generated by or on behalf of the Licensee, any of its Affiliates or Sublicensees ("**Invoicing Entity**") on sales, leases or other transfers of the Licensed Product(s) less the following to the extent applicable with respect to such sales, leases or other transfers and not previously deducted from the gross invoice price: (a) customary trade, quantity or cash discounts to the extent actually allowed and taken; (b) amounts actually repaid or credited by reason of rejection or return of any previously sold, leased or otherwise transferred Licensed Products; (c) customer freight charges that are paid by or on behalf of the Invoicing Entity; and (d) any sales, value added or similar taxes, custom duties or other similar governmental charges levied directly on the production, sale, transportation, delivery or use of a Licensed Product that are paid by or on behalf of the Invoicing Entity, but not including any tax levied with respect to income. Amounts received against sales of Licensed Products by an Invoicing Entity to its Affiliate or a Sublicensee for resale by such Affiliate or Sublicensee will not be deemed Net Sales Revenue. Instead, Net Sales Revenue will be determined based on the gross amount billed or invoiced by such Affiliate or Sublicensee upon resale of such Licensed Products to a third party purchaser.
- 1.19 **Project Manager(s):** has the meaning given in Article 5.1.
- 1.20 **Proof of Concept:** means documented evidence illustrating to the satisfaction of the Licensee that the Manufacture and Commercialization of the Licensed Product is viable and commercially feasible.
- 1.21 **PKR:** shall mean the lawful currency of the Islamic Republic of Pakistan.
- 1.22 **R&D Costs:** has the meaning given in Article 4.7.



- 1.23 **Regulatory Approval:** means any and all approvals (including price and reimbursement approvals, if required prior to sale in the applicable jurisdiction), licenses, registrations, or authorizations of any country, federal, supranational, state or local regulatory agency, department, bureau or other government entity that are necessary for the Manufacture or Commercialization of the Licensed Product in the applicable jurisdiction.
- 1.24 **Regulatory Authority or Regulatory Authorities:** shall mean any health regulatory authority(ies) in any country and holds responsibility for granting Regulatory Approvals for the Licensed Product in such country, and any successor(s) thereto.
- 1.25 **Sublicensee(s):** has the meaning given in Article 2.4.
- 1.26 **Term:** shall have the meaning ascribed to it in Article 11.1.
- 1.27 **Third Party:** means any person or entity other than the Licensee or its Affiliates.
- 1.28 **Trademarks:** has the meaning given in Article 6.3.
- 1.29 **USD:** shall mean the lawful currency of the United States of America.

ARTICLE 2 - LICENSE

2.1 Grant of License

Subject to the terms and conditions set forth in this Agreement, the Licensor hereby grants to the Licensee an exclusive, worldwide, royalty-bearing and non-transferable (except as expressly set forth herein) license under the Licensor's interest in the Patent Rights and the Licensor Know-How to Develop, Manufacture and Commercialize Licensed Products during the Term.

2.2 Reservation of Rights

Notwithstanding anything contained in Article 2.1 above, the Licensor and Inventors of the Patent Rights expressly reserve the right to use the Patent Rights solely (i) for research, teaching, and other education related purposes; (ii) in publications related to its scientific research and findings; and (iii) for any other non-profit purpose that is not inconsistent with the rights granted to Licensee under this Agreement.

2.3 Affiliates

The license granted to the Licensee under Article 2.1 includes the right to have some or all of the Licensee's rights or obligations under this Agreement exercised or performed by one or more of the Licensee's Affiliates, solely on the Licensee's behalf. Provided that no such Affiliate shall be entitled to grant, directly or indirectly, to any Third Party any right of whatever nature under, or with respect to, or permitting any use or exploitation of the Patent Rights or Licensors Know-How and that any act or omission taken or made by an Affiliate of the Licensee under this Agreement shall be deemed an act or omission by Licensee under this Agreement.

2.4 Subcontracting

The Licensee may grant sub-contracts to one or more Third Parties (any such Third Parties, together with all their direct and indirect subcontracting), of the licenses granted to the Licensors hereunder, subject to the Licensors' prior written consent with respect to the identity of the potential subcontractor, such consent not to be unreasonably withheld. The Licensee shall remain responsible for the performance of its obligations set forth herein by each of its subcontractors.

2.5 Assignment

Except as set forth in this Article 2, this Agreement, the rights granted to Licensee, and the duties and obligations of Licensee are all personal to Licensee and Licensee agrees not to sell, assign, transfer, mortgage, pledge, or hypothecate any such rights in whole or in part, or delegate any of its duties or obligations under this Agreement; nor shall any of Licensee's rights or duties be assigned, transferred, or delegated by Licensee to any third party by operation of law. Any purported transfer, assignment, or delegation in violation of the foregoing obligation shall be void and without effect, and this Agreement shall thereupon become terminable without further notice by Licensors. In the context of this provision, an "assignment" shall include the transfer of substantially all of the assets of Licensee, or of a majority interest in the voting stock of Licensee, or the merger, consolidation, or reorganization of Licensee with one or more third parties except as expressly agreed under this Agreement, or as the Licensors and Licensee may otherwise mutually agree.

2.5 Right to License Improvements

The Licensors hereby grants the Licensee the right to license the "Basic Patent" which is based upon the "technology" defined in clause 2.7. Any "Improvement to patent

rights" (defined in clause 2.8) would be the offered to Licensee for the first right of refusal before it is offered by licensor to any other party.

2.6 No Other Grant of Rights

No license or other right other than those expressly granted under this Article 2, is hereby granted by Licensor to Licensee.

2.7 Technology

Hybridization based sensing of disease specific DNA markers through (but not limited to) electrochemical transduction.

Financial Terms and Conditions will be renegotiated if the technology is used for the detection of any other disease.

2.8 Improvement to patent rights

Something that modifies portions of the technology of the basic patent

ARTICLE 3 – DISCLOSURE OF KNOW-HOW

- 3.1 Within 15 days after the Execution Date of this Agreement, the Licensor shall disclose or make available to the Licensee copies of all of the Licensor Know-How. Thereafter, during the Term the Licensor shall disclose and make available to the Licensee all future Licensor Know-How on a regular basis, provided that all material new Licensor Know-How shall be provided without delay.

ARTICLE 4 - MILESTONE PAYMENTS, ROYALTIES AND R&D COSTS

4.1. Milestone Payments

In consideration of the grant of the license in terms of this Agreement, the Licensee shall pay to the Licensor the following milestone payments:

- 4.1.1 PKR 1,000,000/- (Pak Rupees One Million Only) at the Execution Date;



- 4.1.2 PKR 500,000/- (Pak Rupees Five Hundred Thousand Only) upon successful delivery of the Phase I Performance Parameters (as defined in the Development Plan);
- 4.1.3 PKR 500,000/- (Pak Rupees Five Hundred Thousand Only) to be paid upon successful delivery of the Phase II Performance Parameters (as defined in the Development Plan); and
- 4.1.4 PKR 2,000,000/- (Pak Rupees Two Million Only) to be paid upon successful delivery of the Phase III Performance Parameters (as defined in the Development Plan).

4.2 Milestone Notifications

The Licensee shall notify the Licensor in writing within thirty days following the achievement of each milestone described in Article 4.1 and shall make the appropriate milestone payment within thirty days after the achievement of each milestone.

4.3 Royalties on Net Sales Revenue

In addition to the foregoing milestone payments, the Licensee shall pay to the Licensor, on a quarterly basis, earned running royalties equal to two percent (2%) of the Net Sales Revenue during the Term.

4.4 Royalty Reports

Within thirty (30) days after the conclusion of each calendar quarter commencing with the first calendar quarter in which Net Sales Revenue is generated, the Licensee shall deliver to the Licensor a report containing the following information (in each instance, with a country-by-country breakdown):

- 4.4.1 the number of units of Licensed Products sold, leased or otherwise transferred by Invoicing Entities for the applicable calendar quarter;
- 4.4.2 the gross amount billed or invoiced for Licensed Products sold, leased or otherwise transferred by Invoicing Entities during the applicable calendar quarter;
- 4.4.3 a calculation of Net Sales Revenue for the applicable Calendar Quarter, including an itemized listing of allowable deductions and the actual selling price; and



4.4.4 the total amount payable to the Licensor on Net Sales Revenue for the applicable calendar quarter, together with the exchange rates used for conversion, where applicable.

4.5 Payment of Royalties on Net Sales Revenue

The Licensee shall pay the Licensor the applicable royalty payable to the Licensor on Net Sales Revenue for the applicable calendar quarter within thirty (30) days of the end of the relevant calendar quarter.

4.6 Review of Royalties

The Parties agree to undertake good faith discussions on the third anniversary of the Execution Date, and every three years thereafter, in order to review and agree any reasonable adjustments to the quantum of royalties payable to the Licensor hereunder. In the event the Licensor and Licensee fail to reach agreement on a revised quantum of royalties within thirty (30) days of the third anniversary of the Execution Date or every subsequent three year period as applicable, the Licensor and Licensee shall mutually appoint an [independent expert] to determine the relevant upward revision to the quantum of the royalties payable hereunder, whose decision on the matter shall be final. The costs of appointing the independent expert shall be borne equally by both the Parties.

4.7 R&D Costs

In addition to the license fee and royalties mentioned herein, the Licensee hereby agree to pay the Licensor an amount not exceeding PKR 10,000,000/- (Pak Rupees Ten Million Only) in consideration of the Development activities to be carried out by the Licensor ("**R&D Costs**"). The amount of the R&D Costs shall be paid by licensee to Licensor or to the third parties agreed with Licensor according to the Project Procurement Plan. Project Procurement plan will be developed and elaborated every month in agreed formal meetings between Project Managers of the licensor and licensee. The minutes of such meeting will clearly elaborate the procurement plans which will be endorsed by the management of Licensor and Licensee for further execution.

4.8 Payment Currency



All sums payable by the Licensee hereunder shall be paid to the Licensor in the Islamic Republic of Pakistan and in PKR or, at the option of the Licensee, in an equivalent amount in USD. Conversion of USD or other foreign currencies to PKR shall be made at the rate quoted by the State Bank of Pakistan on the last business day of the applicable calendar quarter.

4.9 Late Payment Charges

In the event any royalties are not paid on the due date for payment as specified herein, then late payment charges at the rate of ten percent (10%) shall be due in addition to the royalties accrued, on the amount of royalties accrued but not paid hereunder for the period of default. The Parties agree that payment of liquidated damages hereunder shall constitute reasonable compensation to the Licensor in respect of such delay and not a stipulation by way of penalty.

4.10 Withholding Taxes

The Licensee shall be entitled to deduct any withholding taxes and other statutory duties from all payments set forth herein and pay them to the proper tax authorities if required by applicable law. The Licensee shall maintain official receipts related to any withholding taxes and forward copies of such receipts to the Licensor.

ARTICLE 5 – DEVELOPMENT ACTIVITIES

5.1 Project Managers

Within fifteen 15 days after the Execution Date, each Party will appoint (and notify the other Party of the identity of) a representative having the appropriate qualifications including a general understanding of Development and Commercialization issues to act as its alliance manager under this Agreement (“**Project Manager**”). The Project Managers will serve as the primary contact points between the Parties for the purpose of providing each Party with information on the progress of the Development and Commercialization of the Licensed Product. The Project Managers will also be primarily responsible for facilitating the flow of information and otherwise promoting communication, coordination and collaboration between the Parties, providing a single point communication for seeking consensus both internally within each Party’s respective organization, including facilitating review of external corporate communications, and raising cross-Party and/or cross-functional disputes in a timely

manner. Each Party may replace its Project Manager on written notice to the other Party.

5.2 Development Plan

5.2.1 Within thirty days of the Execution Date (or such longer period of time as may be agreed between the Parties), the Parties will agree upon a development plan for the Development of the Licensed Product (the "**Development Plan**").

5.2.2 From time to time during the Term, the Licensee shall update and amend, as appropriate, the then-current Development Plan and submit such updated or amended Development Plan for the Licensor's approval, such approval not to be unreasonably withheld or delayed. Once approved by the Licensor, each updated or amended Development Plan shall become effective and supersede the previous Development Plan as of the date of such approval.

5.3 Licensee Development Activities

Subject to the performance by the Licensor of its disclosure obligations under Article 3 and the performance of its Development obligations under Article 5.4, the Licensee shall exercise Commercially Reasonable Efforts in order to Develop the Licensed Products in accordance with the then-current Development Plan.

5.4 Licensor Development Activities

In addition to any activities to be performed by the Licensor under the Development Plan, the Licensor shall be responsible for performing the following Development activities:

5.4.1 The Licensor shall prepare and deliver the Proof of Concept to the Licensee fifteen days of the Execution Date, including complete references to available knowledge used in developing the Proof of Concept.

5.4.2 The Licensor shall furnish the Licensee with design, Manufacturing and performance specifications in relation to the Licensed Product, which shall be mutually agreed between the Project Managers and shall verify such specifications during trial and commercial-level production of the Licensed Product.

- 5.4.3 Subject to mutual agreement, the Licensor shall engage such personnel as may be required in order to ensure that the Licensor is able to properly perform its obligations under this Agreement in relation to Development and Commercialization activities at the Licensee's expense.
- 5.4.4 The Licensor shall provide the Licensee with such information and assistance as the Licensee may reasonably request in relation to the selection of plant and machinery, raw materials and/or Third Party manufacturers in connection with the Manufacture of the Licensed Product.
- 5.4.5 The Licensor shall provide the Licensee with continued technical assistance and disclose updated Licensor Know-How to the Licensee from time to time in order to improve the Manufacturing of the Licensed Product.
- 5.4.6 The Licensor shall provide the Licensee's representatives with access to and use of its facilities at the Licensee's request, subject to reasonable prior notice. The Licensee shall use the Licensor's facilities under the supervision of an individual nominated by the Licensor.

5.5 Inventors

- 5.5.1 The Licensee shall appoint the Inventors as consultants to provide technical advice, guidance, technical support and supervision in relation to the Development of the Licensed Product. The Licensee will bear the costs of all consulting fees payable to the Inventors, as set out in Schedule B to this Agreement.

- 5.5.2 The Licensor undertakes to procure that the Inventors shall continue to provide their services, technical advice, guidance and supervision in their personal capacity, as and when required, and as per their job description as detailed in Schedule C hereto until such time as the Licensee issues a no objection certificate in the form set out in Schedule D to this Agreement ("NOC") in accordance with the provisions of Article

5.5.3.

- 5.5.3 The NOC shall be issued upon the later of:

- a) the Licensee concluding, at its discretion, that the services of the Inventors are no longer required for the proper Development and/or Commercialization of the Licensed Product; or

b) Fourty Two months after the Execution Date.

5.6 Special Termination Event

Subject to the death or personal incapacity of any of the Inventors (before the issuance of any NOC described in the clause 5.5.2 and 5.5.3), the Licensor's failure to ensure availability of the Inventors to perform the services described in Schedule C hereto shall constitute a material breach of this Agreement and shall entitle the Licensee to terminate this Agreement with Thirty days' written notice. In the event of termination of the Agreement under this Article 5.6, the Licensor shall:

5.6.1 refund to the Licensee all royalties and licensing fees paid to the Licensor hereunder; and

5.6.2 waive all its rights to institute any legal proceedings or make any claims against the Licensee for the termination of this Agreement pursuant to this Article 5.6.

5.7 Development Reports

Within thirty (30) days of the end of each calendar year commencing from the Execution Date until commercial launch of the Licensed Product, the Licensee shall furnish the Licensor with a written report summarizing its efforts during the prior year to Develop the Licensed Product. Each report must contain a sufficient level of detail for the Licensor to assess whether the Licensee is in compliance with its obligations under Article 5.3.

5.8 Development Costs

Except as expressly stated to the contrary herein, each Party shall bear its own costs and expenses in relation to the Development activities to be performed by it hereunder.

5.9 Commercial Launch

The Parties agree to procure that Development of the Licensed Product is completed and it is made ready for commercial launch on or before [insert date] (or such extended date as may be agreed in writing between the Parties), failing which both parties will meet and agree in writing to ...

- a) Continue the Project with a re-written and agreed project plan and procurement plan – OR....
- b) Terminate the agreement with mutual consent according the caluses of termination stipulated in Article 11 of this agreement.

ARTICLE 6 – COMMERCIALIZATION ACTIVITIES

6.1 Product Pricing

Subject to the requirement of any Regulatory Authorities, the sale price of the Licensed Product shall be mutually agreed between the Parties.

6.2 Licensee's Commercialization Activities

Except as specified in Article 6.1, the Licensee, its Affiliates and its Sublicensees shall have responsibility for all decisions related to, and implementation of, Commercialization activities in connection with the Licensed Product. The Licensee will prepare and submit to the Licensor a Commercialization plan no later than Thirty days prior to the anticipated date of Regulatory Approval for the Licensed Product in the first applicable country (the "**Commercialization Plan**"). The Licensee will update such Commercialization Plan on a yearly basis and will provide quarterly reports to the Licensor describing Licensee's progress against such Commercialization Plan. The Licensee shall use Commercially Reasonable Efforts to maximize sales of the Licensed Product in accordance with the Commercialization Plan.

6.3 Trademarks

The Licensee shall have the right to brand the Licensed Product using the Licensee's trademarks and any other trademarks and trade names it determines appropriate for the Licensed Product ("**Trademarks**"). The Licensee shall own all rights in the Trademarks and register and maintain the Trademarks in the countries and regions it determines reasonably necessary. The Licensee shall remain the exclusive sole owner of the Trademarks notwithstanding termination or expiry of this Agreement.

ARTICLE 7 – MANUFACTURING ACTIVITIES

- 7.1 The Licensee shall, itself or through one or more Third Party contract manufacturers, Manufacture and supply the Licensed Product in finished form

for the purposes of all Development and Commercialization activities contemplated hereunder.

ARTICLE 8 - REPORTS, BOOKS, AND RECORDS

8.1 Records and Audit Rights

Licensee shall keep full, complete, and accurate books of account and records of all Licensed Products that are made, used, sold, leased or transferred under this Agreement and any amounts payable to the Licensor in relation to such Licensed Products. Licensee shall preserve such books and records relating a given calendar quarter for a period of five (5) years after the conclusion of that calendar quarter, during which, Licensor may at its expense, upon reasonable notice in writing to Licensee, cause an independent audit to be made by a ceritifed public accountant during normal business hours of the books and records of the Licensee in order to verify the statements rendered under this Agreement in relation to the Net Sales Revenue. In the event that such an audit discloses any underpayment or overpayment by the Licensee, the Parties shall reconcile such discrepancy within fifteen days of the date that the accountant delivers the results of the audit. The Licensor may exercise its rights under this Article 8.1 no more than once every calendar year.

8.2 Confidentiality of Audit

Any accountant appointed to carry out the audit contemplated under Article 8.1 shall not disclose to Licensor any information relating to the business of Licensee except that which is necessary to inform Licensor of the accuracy or inaccuracy of reports and payments delivered by the Licensee under this Agreement.

8.3 Reimbursement of Audit Costs

In the event that any audit performed under this Article 8 reveals an underpayment of five percent (5%) or more for any calendar quarter, the reasonable costs of any audit and review initiated by the Licensor hereunder will be reimbursed by Licensee.

ARTICLE 9 – PATENT FILING, PROSECUTION AND MAINTENANCE

9.1 Control

The Licensor will be responsible for the preparation, filing, prosecution, protection, defense and maintenance of all Patent Rights, using independent

patent counsel reasonably acceptable to Licensee at its own cost and expense. The Licenser will: (a) instruct such patent counsel to furnish the Licensee with copies of all correspondence relating to the Patent Rights from any patent office, as well as copies of all proposed responses to such correspondence in time for Licensee to review and comment on such response; (b) give Licensee an opportunity to review the text of each patent application before filing; (c) consult with Licensee with respect thereto; (d) supply Licensee with a copy of the application as filed, together with notice of its filing date and serial number; and (e) keep Licensee advised of the status of actual and prospective patent filings. The Licenser shall give Licensee the opportunity to provide comments on and make requests of the Licenser concerning the preparation, filing, prosecution, protection, defense and maintenance of the Patent Rights, and shall seriously consider such comments and requests; however, final decision-making authority shall vest in the Licenser. If the Licenser elects not to prepare, file, prosecute or maintain any patent applications or patents within Patent Rights in any given country(ies), the Licenser shall give Licensee written notice thereof within a reasonable period, not less than thirty (30) calendar days, prior to allowing such patent applications or patents to lapse or become abandoned or unenforceable, and the Licensee shall thereafter have the right, at its sole expense and discretion, to prepare, file, prosecute and maintain such patent applications or patents in such countries.

9.2 Notice

In the event either Party becomes aware of any possible or actual infringement of any Patent Rights with respect to the Licensed Product (an "**Infringement**"), that Party shall promptly notify the other Party and provide it with details regarding such Infringement.

9.3 Suit by Licenser

The Licenser shall have the initial right, but not the obligation, to institute, prosecute and control any action, suit or proceeding (an "**Action**") with respect to such infringement including any declaratory judgment action, at its expense, using counsel of its choice. The Licensee shall cooperate reasonably with the Licenser, including being named in such Action if necessary, at the Licenser's written request and expense,

in connection with any such Action. Any amounts recovered in such Action shall be used first to reimburse costs and expenses incurred by the Licensor and then by the Licensee, to the extent such costs and expenses have been reasonably incurred in connection with such Action (including attorneys and expert fees) and any remainder attributable to compensatory damages shall be paid over to the Licensee and shall be treated as Net Sales Revenue hereunder except to the extent that the Licensor has already received royalty payments for such amounts.

9.4 Step-in Enforcement

In the event that the Licensor fails to take action to abate any commercially significant infringement of the Patent Rights (i.e., by initiating an Action or by entering into negotiations with the alleged infringer) within two (2) months of receiving notice thereof (or a shorter period of time if the Licensee's rights in the Patent Rights are reasonably likely to be prejudiced by such a delay), the Licensee shall have the right, but not the obligation, to initiate and/or maintain such Action in its own name and at its own expense, and the Licensor shall cooperate reasonably with the Licensee, at the Licensee's written request and expense, in connection with any such Action. Any amounts recovered in such Action shall be used first to reimburse costs and expenses incurred by the Licensee and then the Licensor, to the extent such costs and expenses have been reasonably incurred in connection with such Action (including attorneys and expert fees) and any remainder attributable to compensatory damages shall be retained by the Licensee and shall be treated as Net Sales Revenue hereunder except to the extent that the Licensor has already received royalty payments such amounts.

9.4 Cooperation

In any Action, the Parties shall provide each other with reasonable cooperation and assistance, including agreeing to be named as a party to such Action, causing other necessary parties and parties with an interest to join and be named as necessary, and, upon the written request and at the expense of the Party bringing such Action, the other Party shall make available, at reasonable times and under appropriate conditions, all relevant personnel, records, papers, information, samples, specimens, and the like in its possession.

9.5 Patent Validity

A handwritten signature in dark ink, consisting of a large, stylized capital 'P' followed by a cursive 'er'.

- 9.5.1 The Licensee shall not challenge or seek to question the validity of the Patent Rights directly or by assisting any third party in respect thereof. If any claim challenging the validity or enforceability of any of the Patent Rights is brought against Licensee, Licensee will promptly notify the Licensor. The Licensor, at its option, will have the right, within seven days of receipt from the Licensee of such action, to intervene and take over the sole defense of the claim at Licensor's expense.
- 9.5.2 If Licensee or third party challenges the validity or enforceability of any of Patent Rights, Licensee will not suspend any payments due to the Licensor until such time as the Patent Rights are determined to be invalid or unenforceable by a final judgment of a court of competent jurisdiction from which no appeal can be or is taken.

ARTICLE 10 – REPRESENTATIONS AND WARRANTIES

10.1 Licensor's Representations and Warranties

The Licensor hereby represents and warrants to the Licensee that:

- 10.1.1 the Licensor is a body corporate, duly organized validly existing and in good standing under the laws of Pakistan;
- 10.1.2 the execution, delivery and performance of this Agreement has been duly authorized by all necessary corporate or other action on the part of the Licensor;
- 10.1.3 the Licensor has the right and authority to grant the rights and licenses granted to the Licensee under this Agreement;
- 10.1.4 the Licensor has not granted any right, license or interest in, to or under the Patent Rights or Licensor Know-How inconsistent with the rights, license and interests granted to the Licensee in this Agreement, and the Licensor shall not grant during the term of this Agreement any right, license or interest in, to or under the Patent Rights or Licensor Know-How that is inconsistent with the rights, licenses and interests granted to the Licensee hereunder;
- 10.1.5 there is no pending or, to the Licensor's knowledge, threatened Third Party lawsuit, claim, action or demand against the Licensor which relates to the use of any Patent Rights or Licensor Know-How; and
- 10.1.6 other than the patents and patent applications listed in Schedule A, the Licensor is not the owner, assignee, co-assignee, or licensee, of any patents, or patent

applications, that would (i) cover the Licensed Product or (ii) preclude the Licensee from exercising any of the rights granted hereunder.

10.2 Licensee's Representations and Warranties

The Licensee hereby represents and warrants to the Licenser that:

- 10.2.1 the Licensee is a company, duly organized, validly existing and in good standing under the laws of Pakistan;
- 10.2.2 the execution, delivery and performance of this Agreement has been duly authorized by all necessary corporate action on the part of the Licensee; and
- 10.2.3 the execution, delivery and performance of this Agreement will not conflict with any agreement to which Otonomy is a party or by which it is bound.

ARTICLE 11 – TERM AND TERMINATION

11.1 Term

Unless terminated earlier in accordance with the provisions hereof, this Agreement shall remain in force until expiry of the Patent Rights (“Term”).

11.2 Termination by Licensee for Convenience

The Licensee may terminate the license granted under this Agreement without cause by giving the Licenser thirty days' notice in writing.

11.3 Termination by Licenser for Default

The Licenser may terminate this Agreement with immediate effect by written notice to the Licensee in the event that:

- (a) the Licensee fails to pay an amount when due, and such default has not been remedied by the Licensee within sixty days of being notified in writing by the Licenser;

- (b) the Licensee default in the preparation of the Development Plan, Commercialization Plan or other reports required under this Agreement, which default continues for a period of 180 (One hundred and eighty) days after the Licenser has given to the Licensee a written notice of such default;
- (c) the Licensee intentionally and consistently provides any false information in any reports or statements to be delivered to the Licenser under this Agreement;
- (d) the Licensee is declared bankrupt or insolvent or is involved in any litigation as a result of which the Licensee may be declared bankrupt or insolvent by a court of law;
- (e) the Licensee files a petition of bankruptcy or a petition or answer seeking reorganization, readjustment or rearrangement of its business or affairs under any law or governmental regulation relating to bankruptcy or insolvency, or in some other manner ceases to carry on business;
- (f) the Licensee does not diligently proceed with the Development, Manufacture, or Commercialization of the Patent Rights in accordance with any timelines for completion set out in the Development Plan or Commercialization Plan, as applicable, provided that such default continues more than 180 (one hundred eighty) days after receipt of a written notice to cure from the Licenser; or
- (g) the Licensee sub-licenses, sub-contracts or otherwise transfers or assigns any of its rights or obligations under this Agreement except as expressly permitted herein.

11.4 Termination by Licensee for Default

In addition to its rights under Article 5.6, the Licensee may terminate this Agreement with immediate effect by written notice to the Licenser in the event that:

- (a) the Patent Rights are found to be invalid or unenforceable or if they are permitted to lapse by the Licenser;
- (b) the use of the Patent Rights or Licenser Know-How in accordance with this Agreement is found to infringe a third party's intellectual property rights;

- (c) the Licensor assigns, licenses or otherwise transfer the Patent Rights in favour of a third party without the written consent of the Licensee;
- (d) the Licensor commits a material or persistent breach of its obligations under this Agreement and fails to cure such breach within sixty days of receiving a written notice to cure from the Licensee;
- (e) any express warranty made by the Licensor is found to have been breached;
- (f) the Licensee is declared bankrupt or insolvent or is involved in any litigation as a result of which the Licensee may be declared bankrupt or insolvent by a court of law;
- (g) any step is taken for the repeal or amendment of the National University of Sciences and Technology Act, 1997, such that the Licensor is unable to perform its obligations hereunder; or
- (h) the Licensee files a petition of bankruptcy or a petition or answer seeking reorganization, readjustment or rearrangement of its business or affairs under any law or governmental regulation relating to bankruptcy or insolvency, or in some other manner ceases to carry on business.

11.5 Effect of Termination

Termination or expiration of this Agreement shall not relieve the Parties of obligations accruing prior to such termination or expiration, including obligations to pay amounts accruing hereunder up to the date of termination or expiration. After the date of termination or expiration, Licensee, its Affiliates and Sublicensees:

11.5.1 may sell Licensed Products then in stock; and

11.5.2 may complete the Manufacture of Licensed Products then in the process of Manufacture and sell the same;

PROVIDED THAT, in the case of both 11.5.1 and 11.5.2, Licensee shall pay the applicable royalties and payments to the Licensor in accordance with Article 4, provide reports and audit rights to the Licensor pursuant to Article 8.

11.6 Effect of delay, etc.

Failure or delay by either Party to exercise its rights of termination hereunder by reason of any default by the other Party in carrying out any obligation imposed upon it by this Agreement shall not operate as a waiver by the non-breaching Party to exercise its right of termination for the default in question and shall not prejudice the non-breaching Party's right to terminate due to any other subsequent default by the breaching Party.

11.7 Termination Ends Grant of Rights

Upon termination or expiry of this Agreement: (a) the rights and licenses granted to Licensee under Article 2 shall terminate, all rights in and to and under the Patent Rights will revert to the Licensors and neither Licensee nor its Affiliates may make any further use or exploitation of the Patent Rights; and (b) any existing agreements that granting a sublicense of the Licensee's rights under Article 2 to a Sublicensee shall terminate to the extent of such sublicense.

11.8 Final Report

Within Ninety days of termination or expiry of this Agreement, the Licensee shall submit a final report setting out any royalty or other payment accruing in favour of the Licensee as of the effective date of termination or expiry. Any royalty or other amounts due to the Licensors under this Agreement will be paid within [•] days of the submission of the aforesaid report.

ARTICLE 12 - INDEMNIFICATION

12.1 Licensee Indemnification

Licensee shall at all times during the term of this Agreement and thereafter indemnify, defend, and hold Licensors, its directors, officers, employees, and affiliates harmless against all claims, proceedings, demands, and liabilities of any kind whatsoever, including legal expenses and reasonable attorneys' fees, arising out of the death of or injury to any person or out of any damage to property, or resulting from the production, manufacture, sale, use, lease, or advertisement of Licensed Products or arising from any obligation of Licensee under this Agreement. If the Licensee fails to perform any of its obligations arising out of this Agreement, the Licensee shall forthwith indemnify the Licensors against all costs, claims, proceedings and demands, which may occur as a result of such failure on the part of the Licensee.



12.2 Licensor Indemnification

The Licensor shall at all times during the term of this Agreement and thereafter indemnify, defend, and hold Licensee, its directors, officers, employees, and Affiliates harmless against all claims, proceedings, demands, and liabilities of any kind whatsoever, including legal expenses and reasonable attorneys' fees, arising out of any breach of any representation, warranty, or covenant expressly made by Licensor in this Agreement. If the Licensor fails to perform any of its obligations arising out of this Agreement, the Licensor shall forthwith indemnify the Licensee against all costs, claims, proceedings and demands, which may occur as a result of such failure on the part of the Licensor.

ARTICLE 13 - CONFIDENTIALITY

13.1 Definition of Confidential Information

In connection with this Agreement, the Parties have disclosed and will disclose or make available to each other information, data and materials of a confidential or proprietary nature ("**Confidential Information**"), including but not limited to each Party's proprietary know-how, invention disclosures, materials and/or technologies, economic information, business or research strategies, clinical trial data and information, trade secrets and material embodiments thereof.

13.2 Confidentiality and Non-Use

The recipient of a disclosing Party's Confidential Information shall maintain such Confidential Information in confidence, and shall disclose such Confidential Information only to those of its employees, agents, consultants, Affiliates, Sublicensees, attorneys, accountants, advisors, existing and potential investors, and potential development and commercialization partners who have a reasonable need to know such Confidential Information for purposes contemplated by this Agreement and who are bound by obligations of confidentiality and non-use no less restrictive than those set forth herein. The recipient of the disclosing Party's Confidential Information shall use such Confidential Information solely to exercise its rights and perform its obligations under this Agreement (including, without limitation, the right to use and disclose such Confidential Information, to the extent required, in regulatory applications and filings), unless otherwise mutually agreed in writing. The recipient of the disclosing Party's Confidential Information shall take the same degree of care that

it uses to protect its own confidential and proprietary information of a similar nature and importance (but in any event no less than reasonable care).

13.3 Exclusions

Confidential Information of a disclosing Party shall not include information that: (a) was in the recipient's possession prior to receipt from the disclosing Party as demonstrated by contemporaneous documentation; (b) was or becomes, through no fault of the recipient, publicly known; (c) was furnished to the recipient by a third party without breach of a duty or obligation of confidentiality to the disclosing Party; (d) was independently developed by the recipient without use of, application of or reference to the disclosing Party's Confidential Information as demonstrated by contemporaneous documentation.

13.4 Legal Disclosures

It shall not be a violation of this Article 13 for the recipient to disclose the disclosing Party's Confidential Information when such information is required to be disclosed under applicable law, but such disclosure shall be for the sole purpose of and solely to the extent required by such law, and provided that the recipient, to the extent possible, shall give the disclosing Party prior written notice of the proposed disclosure and cooperate fully with the disclosing Party to minimize the scope of any such required disclosure, to the extent possible and in accordance with applicable law and will use all reasonable efforts to secure confidential treatment of such Confidential Information required to be disclosed.

13.5 Termination

All obligations of confidentiality and non-use imposed under this Article 11 shall expire One year after the date of expiration or termination of this Agreement.

13.6 Publications and Press Releases

Neither Party shall issue any press release, publication, or any other public announcement relating to this Agreement, without obtaining the other Party's prior written approval, provided, however, that the Parties may issue a mutually agreed upon joint press release regarding this Agreement at a time to be mutually agreed upon. Once such press releases or other public announcements have been approved for disclosure by the Parties, such approval will not be required again before a Party may subsequently repeat disclosure of information contained therein. Notwithstanding the foregoing,

each Party shall have the right to make such disclosures as may be required by applicable laws, including applicable securities laws.

ARTICLE 14 - FORCE MAJEURE

- 14.1 Except for monetary obligations hereunder, neither party will be responsible for delays resulting from causes beyond the reasonable control of such party, including fire, explosion, flood, war, strike, or riot, provided that the nonperforming party uses commercially reasonable efforts to avoid or remove such causes of nonperformance and continues performance under this Agreement with reasonable dispatch whenever such causes are removed.

ARTICLE 15 – GOVERNING LAW AND DISPUTE RESOLUTION

15.1 Governing Law

This Agreement shall be governed by and construed in accordance with the laws of the Islamic Republic of Pakistan and the competent courts in Islamaabd or Karachi shall have jurisdiction to hear any dispute arising in connection with this Agreement.

15.2 Settlement of Disputes

- 15.2.1 The Parties hereby undertake to use good faith efforts to settle all disputes arising under this Agreement through mutual consultation. Should a dispute arise, the Parties agree to refer it to senior manager duly authorized to represent each Party in relation to the settlement of the dispute (“**Authorized Representatives**”). The Authorized Representatives shall communicate with each other within five (5) Business Days for the purpose of endeavoring to resolve such dispute. The Authorized Representatives shall discuss the problem and negotiate in good faith in an effort to resolve the dispute without the necessity of any formal proceeding relating thereto. If the dispute has not been resolved by the Authorized Representatives within thirty (30) days of their first communication, then either Party may seek other relief as provided herein.

- 15.2.2 Subject to Clause 15.2.1 above, any dispute arising under or in connection with this Agreement, including any question regarding its existence, validity or termination, shall be submitted to arbitration in accordance with the Arbitration Act, 1940 and any applicable rules made thereunder for the time being in force, for the equitable decision of two arbitrators, one to be appointed by each of the Parties, and failing agreement between the arbitrators, to the decision of an umpire, to be appointed by the arbitrators, whose fee shall be borne equally by the Parties. The award made by such arbitrators or the umpire, as the case may be, shall be final and binding upon both Parties. The venue of the arbitration shall be Karachi and the arbitration proceedings shall be conducted in the English language.

This Agreement and the Schedules attached hereto represent the entire agreement between the Parties relating to the subject matter hereof and supersedes all prior communications relating thereto, oral or written, if any.

16.5 Amendment

This Agreement may not be supplemented, amended modified or changed except by an instrument in writing signed by the Parties.

16.6 Severability

Any provision of this Agreement which is found to be unlawful or unenforceable shall be ineffective to the extent of such unlawfulness or unenforceability without invalidating the remaining provisions hereof, and any such prohibition or unenforceability will not invalidate or render unenforceable any other provision hereof.

16.7 Counterparts

This Agreement is executed in two originals, one of which shall be retained by each Party and each will be treated as an original.

In witness whereof, the parties hereto have caused this Agreement to be executed by their duly authorized representatives.

The effective date of this Agreement is Nov. 30, 2018.

A handwritten signature in black ink, consisting of a stylized capital 'P' followed by a cursive 'r'.

ARTICLE 16 – MISCELLANEOUS

16.1 Notices

Any notice, request, instruction or other document to be given hereunder (except as provided otherwise) shall be delivered or sent by courier, fax or e-mail to the address, e-mail address or telephone number of the other Party at the address set out herein below (or such other address or numbers as may be notified from time to time) in writing. Any such notice or other document shall be deemed to have been delivered upon the expiration of forty-eight (48) hours after handing over to a courier and if sent by fax, upon the expiration of twelve (12) hours after dispatch and if sent by e-mail, upon confirmation that the e mail has been sent.

Notice to Licensor:

Contact: Pt. Rector (RIC)
Address: Innovation Drive
Fax No: Sector H-12
Email: Main Campus NUST-H-12
Islamabad

Notice to Licensee:

Contact: DR. SHAHIDA QAISAR
Address: D-86-A. S.I.T.E KARACHI 75700
Fax No: (009221) 32561330
Email: shahida.makhdum@gmail.com

16.2 Relationship of the Parties

Each of the Parties are independent contractors whose employees, agents or agents' representatives, etc., are under their exclusive control and supervision.

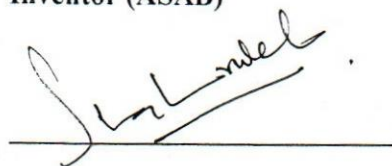
16.3 Assignment

Neither Party shall assign its rights under this Agreement without the prior written consent of the other Party, which shall not be unreasonably withheld.

16.4 Entire Agreement



Inventor (ASAB)



Name: Dr. Shah Rukh Abbas

Title: Assistant Professor ASAB, NUST

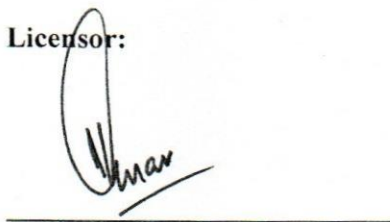
Head of Inventor's Institution



Name: Dr Peter John

Title: Principal ASAB

Licensor:



**Name: Rear Admiral Dr. Nassar Ikram
HI (M)**

Title: Pro Rector RIC (NUST)

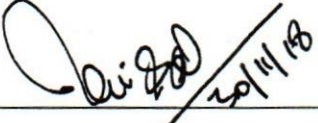
Licensee:



Name: Dr. Shahida Qaiser

Title: Managing Director (Pharmatec)

Witness 1:



Name: Mohammad Faisal

Title: Dir I&C , NUST

Witness 2:



Name: Saba Khan

Title: GM Technology Transfer

Witness 3:



Name: Dr. M. Arshad Saleem

Title: COO Pharmatec

Schedule A: Project Definitions and Highlights

After discussion between Dr. Shah Rukh Abbas and Pharmatec Pvt Ltd., following is mutually proposed which can become part of our future agreements and understandings.

1. Following are the definitions derived from the discussion.

Project
Development and Commercialization of Portable and Robust DNA based sensor device for Tuberculosis detection along with MDR and XDR profiling.
TECHNOLOGY
Hybridization based sensing of disease specific DNA markers through (but not limited to) electrochemical transduction.
FOLLOWING ARE THE MAIN PROJECT FEATURES <ul style="list-style-type: none">• Portable• Battery Driven• Easy handling• Can detect MDR-TB, and XDR-TB• Include Drug Susceptibility Profiling• Test time is less than 5 mins• Stable at room temperature• Very small sample is required (less than 0.5mL)• Economical• Connectivity through WIFI and Mobile/Computer App development• Comparable (-to-high) sensitivity and specificity to GeneXpert

2. Our licensing agreement would be...
 - a. Not limited to any time lines
 - b. Not dependent on Patents
 - c. Not limited to any territory (e.g. Pakistan)
3. Although not bound to the specific timelines, however we agree with the project timeline details suggested in the presentation slide number 9 (attached for your reference).
4. Although the project operational details will be Phased and will be step by step derived and mutually agreed by inventor and both parties, we agree to the slide number 7 of the presentation attached.

Schedule B: Phases of the project

Phase I (Jan2019-Jan2020): Designing, synthesis of proof of concept and developing confidence over performance parameters (sensitivity and specificity) of the main component of sensor

- Designing probe DNAs (specific to TB, MDR-TB and XDR-TB)
- Functionalizing SPEs with probe DNAs
- Quality assessment of sensor via its electrochemistry performance parameters

Sensitivity (down to pM DNA)

Specificity (Classification of samples to respective types of TB: MDR, XDR)

Time of detection

Stability at Room Temperature

Sample type and minimal preparation requirements

Phase II (June 2019-Feb 2020): Development of portable commercial ready product prototype

Portability

Energy dependence

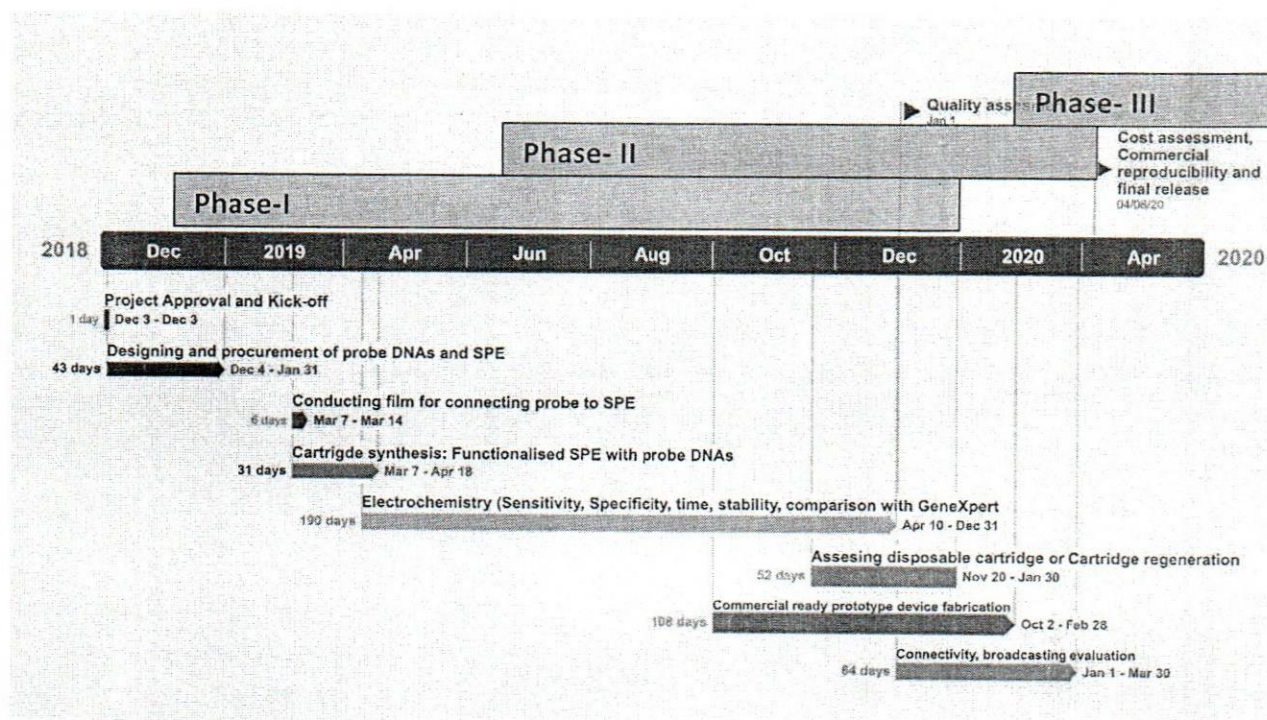
Stability

Digital calibration

Phase III (Feb 2020-June 2020): Development of mobile connectivity interface (App) and a working software to store and transfer data

- Working software and Mobile App development
- Wifi Connectivity interface
- Data storage

Schedule C: Gantt Chart



Schedule D: No Objection Certificate

TO WHOM IT MAY CONCERN

It is hereby stated that _____ S/D/O

_____ holding CNIC# _____,

inventor / developer of the product, has completed all requirements agreed between the

licensor and the license, for developing the product / device, as per this agreement and as

defined in Annexure B, Phases of Project and other relevant documents.

Shahida Qaisar
Managing Director
Pharmatec Private Limited